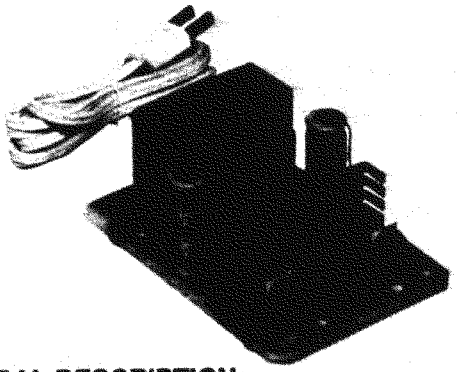
JAMECO
ELECTRONIC COMPONENTS
COMPUTER PRODUCTS

KIT ASSEMBLY INSTRUCTIONS

20626 (JE215) ADJUSTABLE DUAL POWER SUPPLY KIT



GENERAL DESCRIPTION:

The 20626 is a dual power supply with independent adjustable positive and negative output voltages. A separate adjustment for each of the supplies provides the user unlimited aplications for IC circuit voltage requirements. The supply can also be used as a general all purpose variable power supply.

- Adjustable regulated power supplies positive and negative 1.2 VDC to 15VDC.
- Power output (each supply): 5VDC @ 500mA, 10VDC @ 750mA, 12VDC @ 500mA and 15VDC @ 175mA.
- Two, 3-terminal adjustable regulators with thermal overload protection.
- Heat sink regulator cooling.

PARTS LIST:

Component Reference	Part Number	Product Description	Quantity
IC1	23579	Regulator. Adj Pos., LM317T	1
IC2	23819	Regulator, Adj Neg LM337T	1
C1, C2	11033	Capacitor, Elec, 2200MF, 16V	2
C3, C4	33662	Capacitor, Tan. 1MF, 35V	2
CR1, CR4	35975	Diode, 1N4001	4
LED1	34796	LED Display, XC556R	1
R1	29655	Resistor, 1/4 W, 1K (BRN-BLK-RED)	1
R2, R5	30251	Resistor, 1/4 W, 180 OHMS (BRN-GRY-BRN)	2
R3, R4	35502	Potentiometer, Adj, CRL 2.5K	2
P1	42041	Power cord, 2 cond	1
T1	29225	Transformer, P8130 or EQ	1
	42622	Heat sink, THM 6030 or EQ	2
	20642	Printed wiring BD JE215-1	1
	40969	Screw, PH 4-40 x 3/8"	2
	42446	Screw, PH 6-32 x 3/8"	6
	42462	Washer, LK #6	2
	40942	Nut, Hex 4-40	2
	42420	Nut, Hex 6-32	10
	32011	Bumper feet, SJ5012 or EQ	4
	20634	Kit instructions for 20626 (JE215)	1

All above components may be purchased separately from Jameco using the 5-digit part number.

ASSEMBLY PREPARATION AND PROCEDURES:

1. Important: Identify all parts on parts list before proceeding.
2. Suggestion: Simulate board assembly by placing the components in their actual place on the picture assembly, then transfer components to the actual board during assembly.
3. Tools required:
   - Small soldering iron, 27W to 35W.
   - Resin core solder, .03" Dia. SN60 or SN63. Do not use acid core type or 50/50 solder.
   - Small sponge (water dampened) for cleaning solder tip.
   - Small wire cutter/stripper.
   - Small long nose plier.
   - Screw driver.
   - Plastic electrical tape, 3/4" wide.
   - DC meter 0 to 18VDC range.

Component wire stripping, bending and lead spreading.

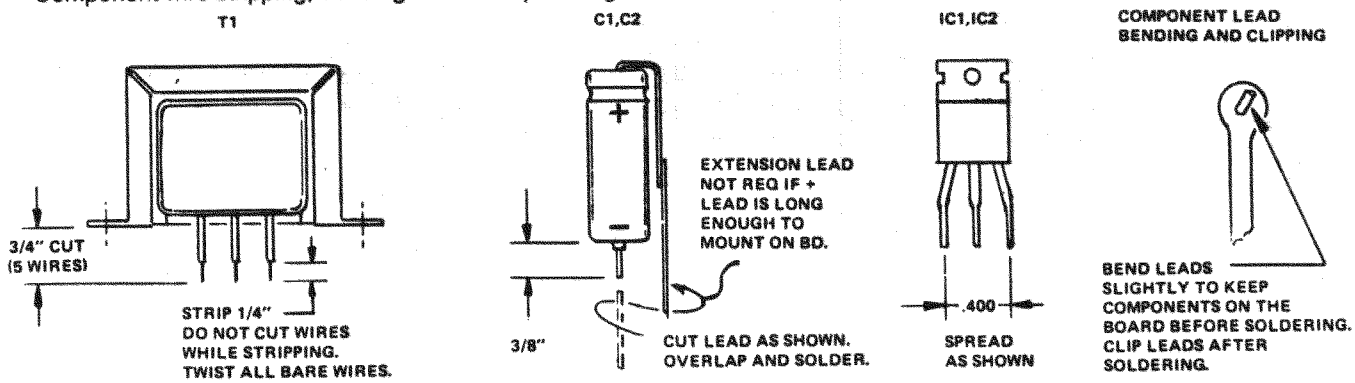

T1
3/4" CUT (5 WIRES)
STRIP 1/4" DO NOT CUT WIRES WHILE STRIPPING. TWIST ALL BARE WIRES.
C1,C2
EXTENSION LEAD NOT REQ IF + LEAD IS LONG ENOUGH TO MOUNT ON BD.
3/8"
CUT LEAD AS SHOWN. OVERLAP AND SOLDER.
IC1,IC2
.400
SPREAD AS SHOWN
COMPONENT LEAD BENDING AND CLIPPING
BEND LEADS SLIGHTLY TO KEEP COMPONENTS ON THE BOARD BEFORE SOLDERING. CLIP LEADS AFTER SOLDERING.

Figure 1

20626 (JE215) ADJUSTABLE DUAL POWER SUPPLY KIT

SOLDERING TIPS:

1. Feed the solder to the crack between the iron tip and the solder pad next to the component lead.
2. Leaving the iron tip too long on a pad will cause the pad to lift, as well as damage the component. Allow approx. 2 seconds per solder joint.
3. Using too much solder can cause the solder to bridge across traces and pads.
4. Keep iron tip clean by wiping the tip across a water dampened sponge —frequently.

ASSEMBLY INSTRUCTIONS:

READ ALL THE INSTRUCTIONS BEFORE STARTING.

1. Printed wiring board assembly. See assembly picture.
   - 1.1 Start the board assembly by placing the PW board to the position shown on the assembly picture. The etched foil on the board will be on the back side.
   - 1.2 Insert diodes CR1 thru CR4 as shown. The polarity band on each of the diodes must be placed as shown on the assembly. Mount all diodes 1/8"above board. Solder and clip leads.
   - 1.3 Insert resistors R1, R2, and R5. Be sure that the color coded values are properly placed. Solder and clip leads.
   - 1.4 Insert capacitors C3, and C4. Be sure that the (+) lead on each of the capacitors is placed correctly into the board. Solder and clip leads.
   - 1.5 Install transformer T1 by first inserting the leads into the board before securing it down with the hardware. The CT (center tap) lead is different in color in this group of 3 wires and must go into the hole marked "CT".
   - 1.6 Insert regulators IC1 and IC2. Push leads about 1/8" into the board. Do not solder as yet. Be sure the correct IC is placed into the correct location.
   - 1.7 Install the heat sinks behind the ICs as shown. Push the heat sink into the holes. Allow 1/8" air space between the bottom of the heat sink and the top of the board. Secure ICs to heat sink with No. 4 hardware. Solder IC leads and clip leads as required.
   - 1.8 Insert capacitors C1, and C2. Be sure that the polarity leads are proprerly placed. Push the capacitors against the board and bend each lead 90 degrees. Clip leads about 1/8" long (under board) and solder.
   - 1.9 Insert light emitting diode LED1. Note the (-) polarity lead placement. Adjust the bottom of the LED to approx. 3/4" above the board. Solder and clip leads.
   - 1.10 Insert adjustable resistors R3 and R4. All leads must first be straightened before installing. Mount resistor body flusn on board. Solder and clip leads.
   - 1.11 Install jumper wire JW1 as shown. Use clipped component lead wire. Solder and clip leads.
   - 1.12 Strip power cord P1 insulation back about 1/4". Twist wire leads and insert into location as shown. Bend twisted leads flush against foil pads and solder. As a safety precaution against electrical shocks, place two layers of 3/4" wide plastic electrical tape over the 120VAC input traces. A cable clamp may be used, secured by the transformer to relieve the strain on the power cord leads.
   - 1.13 Insert 4 No.6 screws from the bottom of the board for the output terminals as shown. Tighten the first nut (4) on top of the board. Hand tighten the second nut (4) over the first.
   - 1.14 Place bumper feet (4) approx. as shown to the bottom of the board.
   - 1.15 Cut power supply indent. Labels from instruction sheet. glue or tape the board as shown.

2. Final assembly check-out:
   Do not attempt to plug in the power cord until a final check has been made to verify the correctness of all assembled components. Components IC1 and IC2 will be permanently damaged if their placement is accidentally swapped and diodes CR1 and CR2 will blow if their polarity placement is reversed. Place a check (4) in each of the circles, on the assembly picture, as you go over each component placement.

POWER SUPPLY VOLTAGE ADJUSTMENT:

1. The 20636 (JE215) power supply voltage can be varied by turning adjustable resistors R3 for positive supply and R4 for negative supply. Use a DC voltage meter for correct voltage setting.
2. For dual adjustable positive (or dual negative) outputs, reverse leads on one of the supplies. However when used in this manner, each of the load must be in separate use, i.e. not electrically connected together.

SAFETY NOTES:

1. Never use the power supply on metal surfaces.
2. Allow adequate air ventilation to cool.
3. Unplug power cord when not in use.

Printed Wiring Board Assembly

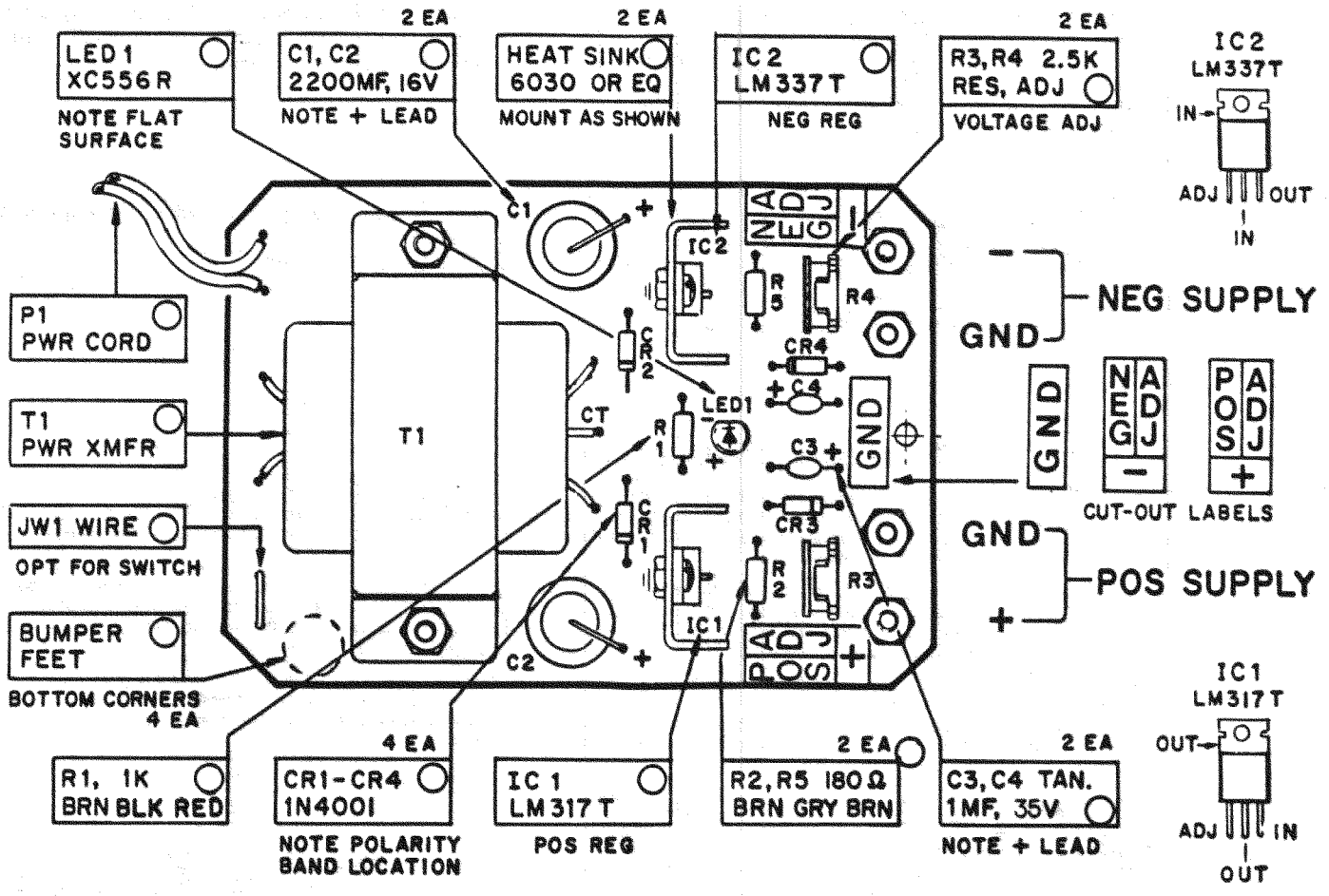


Figure 2

20626 (JE215) Power Supply Schematic Drawing

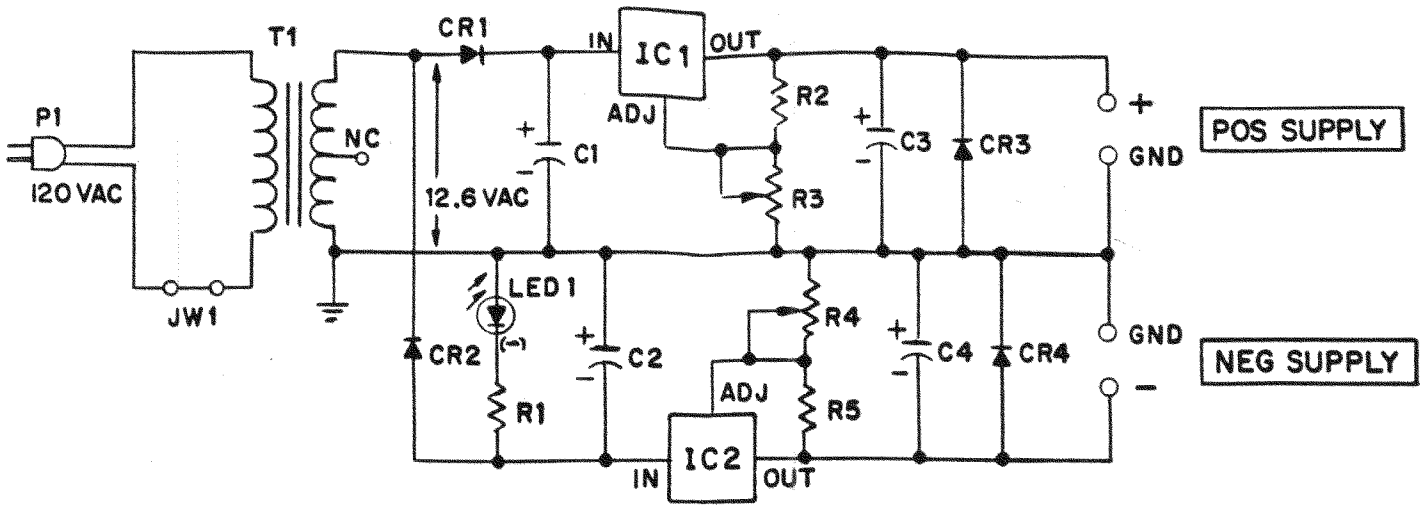


Figure 3

TROUBLE SHOOTING TIPS:

1. No voltage output across supply terminals:
   - 1.1 A. Check power cord for correct wiring and 115 VAC on printed board pads. B. Check for 12.6VAC on secondary leads of transformer T1. C. Check for improper placement of C1and C2 —should have approx 18.5VDC when measured across each of the capacitors. D. Diodes CR1, CR2 and CR5 will blow if polarity bands are placed backwards.
2. Everything functions except "LED1" which does not light:
   - 2.1 A. Reverse lead mounting.
3. Output voltage problems:
   - 3.1 Regulators IC1 and IC2 reversed. Possible permanent damage.
   - 3.2 A. Output voltage stays high; open connections in R3 and R4 terminals —check soldering. B. Output voltage stays low and does not change; shorted R3 and R4 terminals —check for solder bridging.
   - 3.3 Output varies and is difficult to adjust —check placement reversal of C3, C4, CR3 and CR4.
4. Output voltage drops under load:
   - 4.1 Check capacitors C1 or C2 for proper value.

20626 (JE215) ADJUSTABLE DUAL POWER SUPPLY KIT

Important Disclaimer: To the fullest extent permitted by applicable law, Jameco expressly disclaims the implied warranty of fitness for a particular purpose. Customer should understand that Jameco does not make any representation that products purchased will suit customer's particular purpose. Customer must rely on customer's own skill or judgement in selecting suitable products for customer. To the extent any implied warranty is applicable, such warranty shall be limited to 90 days from the date of purchase.

Limitation of Liability: Jameco's liability shall be limited to the repair or replacement of defective products in accordance with the Jameco limited warranty. Jameco shall not be liable for any incidental, special or consequential damages for breach of any warranty, expressed or implied, directly or indirectly arising out of Jameco's sale of merchandise, including any failure to deliver any merchandise, or arising out of customer's installation or use, whether proper or improper, of the product, separately or in combination with other equipment, or from any other cause.

Warranty: Jameco warrants the equipment to be free from defects for a period of 90 days from date of purchase. If found to be defective, these products will be replaced with a new unit, not repaired. No units will be accepted past the 90 day warranty for repair or replacement. There is no charge for any replacement. Equipment or parts which have been subject to abuse, misuse, accident, alteration, neglect and/or unauthorized repair are not covered by the warranty. Seller shall have the right to final determination as to existence and cause of defect.